

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all previous versions or listings of claims of this application.

1. (Currently Amended) A double side polishing method for at least automatically rotating a plurality of carriers holding works to be polished, between an upper and a lower rotary surface plates to simultaneously polish both surfaces of a plurality of works held by the plurality of carriers, comprising:

merging each work with the carrier outside the lower rotary surface plate before supplying the work onto the lower rotary surface plate; and

supplying the work merged with the carrier outside the lower rotary surface plate, onto the lower rotary surface plate in a merged state,

in which, before merging the work with the carrier outside the lower rotary surface plate, the carrier is conveyed from a carrier housing section that houses the carrier to a carrier aligning section and aligned, the work aligned at another place is merged with the carrier aligned at the carrier aligning section, and the work merged with the carrier at the carrier aligning section is supplied from the carrier aligning section onto the lower rotary surface plate, and

such that when the work merged with the carrier is supplied to the lower rotary surface plate, an indexing operation of rotating the lower rotary surface plate through a predetermined angle for each operation is performed to supply the work and carrier to their specified position, and the operation of indexing the lower surface plate is performed so as not to cause carriers already placed on the lower rotary surface plate to move relative to the lower rotary surface plate.

2. (Currently Amended) The double side polishing method according to claim 1, wherein a polished work is ejected from the lower rotary surface plate separately from the carrier or while remaining merged therewith.

3.-4. (Cancelled)

5. (Currently Amended) A double side polishing method using [[for]] a double side polishing apparatus, comprising:

~~a polishing apparatus main body for at least automatically rotating a plurality of carriers holding works to be polished[[,] between [[an]] upper and [[a]] lower rotary surface plates [[to]] of a polishing apparatus main body;~~

~~simultaneously polish polishing both surfaces of a plurality of the works held by the plurality of carriers;~~

~~a merging mechanism for merging each [[work]] of the works with a corresponding one of the carrier carriers outside the polishing apparatus main body; [[and]]~~

~~a supply mechanism for supplying [[the]] each work merged with the corresponding carrier outside the polishing apparatus main body, to the lower rotary surface plate in a merged state, said merging mechanism comprises: and~~

~~housing the plurality of carriers in a carrier housing section,~~

~~said merging step including~~

~~a first aligning mechanism for aligning the carrier each of said carriers;~~

~~a second aligning mechanism for aligning a corresponding one of the [[work]] works before merging it with the carrier an associated one of the carriers; and~~

~~a conveying mechanism for conveying the aligned work into the corresponding aligned carrier.~~

6. (Currently Amended) The double side polishing method according to claim 5, ~~wherein said supply mechanism also acts as an ejection mechanism for further comprising a step of ejecting the work polished on the lower rotary surface plate to an exterior of the polishing apparatus main body while remaining merged with the carrier.~~

7. (Cancelled)

8. (Currently Amended) A double side polishing method for at least automatically rotating a plurality of carriers holding works to be polished[[,]] between an upper and a lower rotary surface plates to simultaneously polish both surfaces of a plurality of works held by the plurality of carriers, comprising:

providing a plurality of upper fluid nozzles in the lower rotary surface plate and/or lower fluid nozzles in the lower rotary surface plate opposite to the plurality of works between the rotary surface plates, the nozzles being opened in a surface of the surface plate, and on separating the upper and lower rotary surface plates from each other after double side polishing has been completed between the upper and lower rotary surface plates; and

causing the lower fluid nozzles to suck the plurality of works in order to hold them on the lower rotary surface plate.

9. (Previously Presented) The double side polishing method according to Claim 8, wherein the plurality of fluid nozzles opened in the surface of the surface plate are provided at least in the upper rotary surface plate so that when the upper and lower rotary surface plates separate from each other, a liquid is injected from the fluid nozzles provided in the upper rotary surface plate.

10.(Currently Amended) A double side polishing method using [[for]] a double side polishing apparatus, the method comprising:

a polishing apparatus main body for at least automatically rotating a plurality of carriers holding works to be polished, between an upper and a lower rotary surface plates;

[[to]] simultaneously polish polishing both surfaces of a plurality of the works held by the plurality of carriers, in which a plurality of fluid nozzles are provided in the lower rotary surface plate opposite to the plurality of works between the rotary surface plates, the nozzles being opened in a surface of the surface plate, and in which the plurality of fluid nozzles provided in the lower rotary surface plate are connected to a suction mechanism.

11. (Previously Presented) The double side polishing method according to claim 10, wherein the plurality of fluid nozzles opened in the surface of the surface plate are provided in the upper rotary surface plate and connected to a liquid supply mechanism.

12. (Currently Amended) A double side polishing method using [[for]] a double side polishing apparatus, the method comprising:

~~a polishing apparatus main body for at least rotating a plurality of carriers holding works to be polished[[,]] between an upper and a lower rotary surface plates of a polishing apparatus main body;~~

~~[[to]] simultaneously polish polishing~~ both surfaces of a plurality of works held by the plurality of carriers;

~~a housing section arranged between the upper and lower rotary surface plates instead of the plurality of carriers and at least auto rotating between the upper and lower rotary surface plates similarly to the carriers to house a plurality of processing bodies for processing polishing cloths installed on opposite surfaces of the upper and lower rotary surface plates; and~~

~~a conveying section for supplying the plurality of processing bodies between the upper and lower rotary surface plates from the housing section and ejecting [[the]] used processing bodies from between the upper and lower rotary surface plates.~~

13. (Currently Amended) The double side polishing method according to claim 12, wherein said processing bodies [[are]] comprise brushes that clean the polishing clothes and/or dressers that level them.

14. (Currently Amended) The double side polishing method according to claim 12, ~~wherein said conveying section is also used as a work conveying section for further comprising~~ supplying unpolished works between the upper and lower rotary surface plates and ejecting polished works from between the upper and lower rotary surface plates.

15. (Currently Amended) The double side polishing method according to claim 5, the polishing apparatus main body further comprising:

a pair of rotary surface plates for polishing both surfaces of the works using a pair of rotary surface plates;

eccentrically holding the works using a plurality of gear-shaped carriers arranged in a periphery of a rotation center between the pair of rotary surface plates to eccentrically hold the works;

synchronously rotating a center gear arranged in the rotation center between the pair of rotary surface plates to engage [[with]] the plurality of carriers arranged about a center gear in the periphery to synchronously rotate them automatically; and

engaging a plurality of auto rotation means mechanisms distributed around the plurality of carriers so as to correspond to them and each engaging with [[the]] a carrier located inside the rotation means mechanisms to hold and automatically rotate said carrier at its specified position in corporation with the center gear.

16. (Currently Amended) The double side polishing method according to claim 15, wherein each of the auto rotation means mechanisms engages with the carrier at one or two or more positions and has one or more rotary gears each having a tooth trace along a rotation axis thereof.

17. (Previously Presented) The double side polishing method according to claim 16, wherein said rotary gear is movable in a rotation axis direction.

18.-19. (Cancelled)

20. (Currently Amended) The double side polishing method according to claim 15, wherein each of the auto rotation means mechanisms is configured to automatically rotate the carrier by means of a worm gear.

21. (Previously Presented) The double side polishing method according to claim 20, wherein said worm gear is made of a resin.

22. (Currently Amended) The double side polishing method according to claim 5, wherein the polishing apparatus main body is based on a method of polishing both surfaces of the wafer held on each carrier by including:

arranging the plurality of carriers holding the wafers between the upper and lower rotary surface plates at predetermined intervals in the rotation direction, and

engaging each carrier with a sun gear located in the center of the surface plate and inner gears located in a periphery thereof, to cause each carrier to make a planetary motion between the upper and lower rotary surface plates,

and there are provided a plurality of supply passages of grinding liquid in the upper rotary surface plate for supplying grinding liquid between upper and lower rotary surface plates via a plurality of supply passages in the upper rotary surface plate, and wherein a sun gear is integrated at a central part of the lower rotary surface plate.

23. (Previously Presented) The double side polishing method according to claim 22, wherein the upper rotary surface plate is rotationally driven independently of the lower rotary surface plate.

24.-26. (Cancelled)

27. (Currently Amended) The double side polishing method according to claim 5, further comprising:

a robot arm moving in at least two directions to transfer and load the transferring and loading wafers supported in a horizontal direction; and

a top sucking chuck attached to the robot arm to suck applying a suction to a top surface of said wafer, [[the]]a top sucking chuck [[is]] made of an outer-circumference annular sucking type that comes in contact with a top surface of a periphery of said wafer in the form of an annulus ring and that has a plurality of suction ports in the annular contact surface, the suction ports being formed in a circumferential direction at intervals.

28. (Currently Amended) The double side polishing method according to claim 5, further comprising:

~~a robot arm moving in at least two directions to transfer and load the transferring and loading wafers supported in a horizontal direction; and~~

~~a bottom sucking chuck attached to the robot arm to bear supporting~~ said wafer from below while sucking a bottom surface thereof, ~~[[the]] a~~ bottom sucking chuck ~~[[is]]~~ made of an outer-circumference arc-shaped sucking type that comes in contact with a circumferential part of a bottom surface of a periphery of the wafer in the form of a circular arc and that has a plurality of suction ports in the circular arc contact surface, the suction ports being formed in a circumferential direction at intervals.